

ABSTRACT

5 Improved focusing of waves is accomplished by compensation for
attenuation effects in a medium. The invention is a combination of a method
of attenuation leveling to allow operation over uneven surfaces and a method
of signal compensation for attenuation that varies with frequency. This
10 combination allows effective focusing of wide band wave signals that operate
through irregular surfaces that cause uneven attenuation effects. Apparatus
is provided to implement this method in clinical applications and research
applications. Spatial attenuation leveling is accomplished with material that
attenuates like the body part to be imaged. Compensation for attenuation
15 that varies with frequency is provided by electronic modification of signal
waveforms. Applications in the field of ultrasonic imaging in human tissue
are specifically discussed. The apparatus includes conformal surfaces that
are in contact with a patient's body that serve to prevent direct contact of the
body with the attenuating material. It also includes fairing surfaces that
20 modify shape of a patient's body to enable scanning of surfaces. Alternate
devices include stand-off devices and immersion configurations.

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